



LABORATORY
OF THE
INLAND REVENUE DEPARTMENT
OTTAWA, CANADA

BULLETIN No. 345

EVAPORATED MILK

NOTES AND COMMENTS.

Under this heading, as occasion arises, the Bulletins issued by this Department will contain, as an appendix, such comment as may seem necessary or advisable upon matters relating to the work of the Department in connection with the administration of the Adulteration Act, the Fertilizers Act, the Feeding Stuffs Act or the Proprietary Medicines Act.

It frequently happens that correspondents ask information regarding the above Acts, of such a nature that the matter in question possesses general interest, and comment upon it would prove acceptable and useful to others than the immediate questioner. In such cases the reply may find a place in these columns. For convenience of reference these notes will be numbered in series.

A. MCGILL,
Chief Analyst.

LABORATORY
OF THE
INLAND REVENUE DEPARTMENT
OTTAWA, CANADA

BULLETIN No. 345

EVAPORATED MILK

OTTAWA, July 6, 1916.

J. U. VINCENT, Esq.,
Deputy Minister of Inland Revenue.

SIR,—I beg to report certain work done upon a limited collection of samples (73 in number) of evaporated milk. These have been examined with the view of ascertaining whether any ground in fact existed for certain complaints to the effect that the metals of the container (tin and lead) were taken into solution by the contents when these developed an acid reaction.

Acidity has been determined in 17 samples, and is found to vary from 26.8 to as high as 46.4, when stated as cubic centimetres decinormal per 100 grammes of the sample. The full meaning of this as tending to render soluble the metal of the containing vessel has yet to be worked out.

In another series of samples tests were made for tin and lead. Practically no determinable quantities of lead were found in solution. Tin was found in 44 samples, the amount varying from a mere trace to as much as 62 milligrammes per 100 cubic centimetres; or 620 parts per million (about 4 grains per pound or 0.062 per cent).

Regarding the effect of this upon health, I may quote Thresh and Porter (*Preservatives*, etc.; Churchill, London, 1906, page 204). "At the present time no one seriously contends that the amount of tin in solution in these (acid) foods has any effect upon the system. As a rule the quantity is very small, rarely amounting to one grain per pound of food substance. *Autenrieth*. (Laboratory manual, etc., trans. Dr. Warren, pub. Blakistons, Sons., Phila., 1915), page 174, says: "Hence tin vessels may be used, and preserved articles of food containing tin, have practically no deleterious action upon health." *Kunkel*. (Handbuch der Toxikologie, s. 216) says: "This is a very slightly poisonous metal. This is established beyond doubt." The extent, however, of its possibly poisonous action, he considers worth further investigation. Parry (*Food and Drugs*, Scott, Greenwood & Son, London), page 373, says: "There is no evidence of a cumulative action of tin, until the daily dose exceeds 2 grains. Dr. Buchanan states that the presence of tin in a sample, in quantities approaching 2 grains to the pound may be taken to signify that the food has become potentially

deleterious to health." I have noted as excessive an amount of tin exceeding 2 grains per pound, or 0.03 per cent. This occurs in 9 samples out of 44 samples in which quantitative determination of tin was made.

I propose to carry this examination for tin and lead further, at an early date, and to attempt to correlate the acidity of the sample with the amount of metallic contamination.

As judged by the ordinary standards for evaporated milk, 46 samples in which the required determinations have been made give results showing them to be essentially up to standard requirements. Two samples were curdled, owing to incomplete sterilization. In six samples the non-fat solids are somewhat low. These are probably made from a rich milk which has been watered. The content in fat meets our standard for evaporated milk; viz. 7.2 per cent.

It may be noted that our standards requiring 7.2 per cent fat and 18.8 per cent non-fat solids were made legal in November 1910; and were at that time, identical with those obtaining in the United States.

In November 1914, an Amendment of the U.S.A. Department of Agriculture changed the standards so as to require 7.8 per cent fat and 17.7 per cent non-fat solids. This change was considered advisable because it was held that, in certain of the Western States, milk solids were normally lower than in the Eastern and Middle States; and that the deficiency obtained in the non-fat solids. So far as Canada is concerned the matter has not been fully investigated; but it may be that owing to differences in the feed and pasture, the same difference holds good. It seems only just to allow, in the meantime, for a possibility which has been established south of the boundary line.

I beg to recommend publication of this report as Bulletin No. 345.

I have the honour to be, Sir,
Your obedient servant,

A. MCGILL,
Chief Analyst.

BULLETIN No. 345—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	
				Quantity.	Cents.	Manufacturer.	Furnisher.

DISTRICT OF NOVA SCOTIA—

1915.							
Oct. 20	Evaporated Milk.	64251	Wentzells, Ltd., Halifax.	3 tins.	25	Malcolm & Sons, St. George, Ont.	Mrs.
" 20	" "	64252	" "	3 "	15	Borden Milk Co., Montreal.	"
" 26	" "	64253	Bauld Bros., Ltd., "	3 "	13	" "	"
" 26	" "	64254	" "	3 "	25	Aylmer Milk Co., Hamilton, Ont.	"

DISTRICT OF NEW BRUNSWICK—

Oct. 5	Evaporated Milk.	66186	2 Barkers, Ltd., St. John.	3 tins.	30	Borden Milk Co., Montreal.	.....
" 5	" "	66187	W. A. Simonds, "	3 "	30	Aylmer Condensed Milk Co., Hamilton.	.....
" 5	" "	66188	" "	3 "	30	Borden Milk Co., Montreal.	.....
" 5	" "	66189	H. W. Cole, Ltd., "	3 "	30	" "	.....
" 7	" "	66190	Baird & Peters, "	3 "	35	" "	.....
" 19	" "	66191	E. G. Hoben, Fredericton	3 "	45	" "	.....
" 20	" "	66192	B. H. Smith & Son, Woodstock, N.B.	3 "	36	Malcolm Condensing Co., St. George, Ont.	.....
" 20	" "	66193	J. S. Dunlop, Moncton...	3 "	36	Borden Milk Co., Montreal.	.....

DISTRICT OF QUEBEC CITY—

Oct. 18	Lait Evaporé...	56565	E. Turcotte, 27 Rue Grant, Quebec.	3 boites	45	Unknown.....	J. B. Renaud.
" 4	" "	56566	A. Drolet, 714 St. Valier, Quebec.	3 "	25	"	Turcotte Frere
" 8	" "	56567	A. Grenier, 91 St. Jean, Quebec.	3 "	45	Aylmer, Ont.....	Mfr.
" 13	" "	56568	O. Lacroix, 19 St. Joseph, Quebec.	3 "	36	J. Malcolm & Son, St. George, Ont.	"
" 15	" "	56569	Cantin Frere, 271 St. Joseph, Quebec.	3 "	15	Unknown.....	Turcotte Frere
" 18	" "	56571	G. Paquet, 154 Du Pont, Quebec.	3 "	30	Borden Milk Co.,	Mfrs.
" 18	" "	56572	" "	3 "	38	Aylmer, Ont.	"

EVAPORATED MILK.

Inspector's Report, (Is not an expression of opinion.)	Results of Analysis.				No. of Sample	Remarks, and Opinion of the Chief Analyst.
	Total Solids.	Fat.	Non-fat Solids.	Acidity CC. N/10 Na OH per 100 grams		

R. J. WAUGH, INSPECTOR.

	p. c.	p. c.	p. c.			
St. George's Brand.....	26.00	7.76	18.24	38.4	64252	Genuine.
St. Charles " .. .	26.86	7.75	19.11	38.4	64253	"
Peerless " .. .	26.92	7.72	19.20	36.8	64253	"
Canada First " .. .	26.12	7.83	18.20	42.0	64254	"

JOHN C. FERGUSON, INSPECTOR.

.....	26.62	7.52	19.00	28.8	66186	Genuine.
.....	26.63	7.93	18.70	31.2	66187	"
.....	26.72	7.54	19.18	28.8	66188	"
.....	26.00	7.19	18.81	35.2	66189	"
Peerless Brand.....	25.23	7.97	18.26	30.4	66190	"
.....	26.81	7.52	19.29	42.4	66191	"
.....	26.64	7.25	19.39	46.4	66192	"
.....	26.62	7.76	18.86	42.0	66193	"

F. X. W. E. BELAND, INSPECTOR.

Renand.....	26.60	7.76	18.84	46.3	56565	Genuine.
tte Frere.....	26.30	7.81	18.49	41.8	56566	"
.....	Sample	curdled	in tin.	.....	56567	Sample curdled.
.....	24.26	7.16	17.10	40.3	56568	Genuine.
tte Frere.....	Sample	curdled	in tin.	56569	Sample curdled.
.....	24.62	6.87	17.75	35.7	56571	Genuine.
.....	26.12	7.62	18.50	37.2	56572	"

BULLETIN No. 345-

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				Quantity.	Cents.	Manufacturer.	Furnisher.

DISTRICT OF MONTREAL-

1915.							
Nov. 5	Evaporated Milk.	67481	Hudon, Hebert & Co., Montreal.	3 tins.	25	Vendor
" 5	" "	67482	L. Chaput, Fils & Co., Montreal.	3 "	25	.....	" .....
" 23	" "	67483	Borden Milk Co., Ltd., Montreal.	3 "	30	.....	" .....
" 23	" "	67484	" " "	3 "	30	.....	" .....
" 23	" "	67485	" " "	3 "	30	.....	" .....

DISTRICT OF OTTAWA-

Sept. 30	Evaporated Milk.	70536	A. P. Johnson, Bronson Ave., Ottawa.	3 cans.	45	Borden Milk Co., Montreal.	.....
Oct. 1	" "	70537	The Sanders, Soule & Casselman Co., Chesterville.	3 "	30	The Sweet Milk Condensed Co., Chesterville.	.....
" 9	Evaporated Cream.	70538	John McGillivray, Smith's Falls.	3 "	38	Aylmer Cond. Co., Aylmer, Ont.	.....
" 12	Evaporated Milk.	70539	E. M. Lerner & Sons, Ottawa.	3 "	28	Borden Milk Co., Montreal.	.....
" 12	" "	70541	S. J. Major, Ltd., Ottawa.	3 "	25	Aylmer Condensed Milk Co., Hamilton.	.....
" 14	" "	70542	J. H. Shouldice, Ottawa East.	3 "	38	Dom. Cannery, Ltd., Hamilton.	.....
" 14	Table Cream...	70543	A. S. Moreland, 4th Ave., Ottawa.	3 "	75	Fussell & Co., Ltd., London, Eng.	.....
" 14	Evaporated Milk.	70544	Cherry & Craig, 1184 Wellington St., Ottawa.	3 "	30	J. Malcolm & Sons, St. George, Ont.	.....
" 13	Homeogenized Milk.	70600	M. J. Laverdure, Hull...	2 "	30	Laurentia Milk Co., Toronto.	.....

DISTRICT OF KINGSTON-

Oct. 28	Evaporated Milk.	70281	V. Cowling, Napanee ...	3 tins.	15
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DISTRICT OF TORONTO-

Oct. 25	Evaporated Milk.	69926	F. F. Hill Co., 946 Bloor St. W., Toronto.	3 cans.	36	Borden Milk Co., Ltd., Montreal.
" 12	" "	69970	James McDermott, Stayner.	3 "	30	" "	.....
" 14	" "	69971	Vair Grocery Co., Barrie.	3 "	38	Aylmer Condensed Milk Co., Hamilton.	.....
" 20	" "	69972	W. M. Thompson, Penetang.	3 "	15	Pacific Coast Condensed Milk Co., Seattle.	.....
" 20	" "	69973	The Playfair, Preston Co., Ltd., Midland.	3 "	30	Malcolm Condensed Milk Co., St. George.	.....

EVAPORATED MILK.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.				No. of Sample.	Remarks and Opinion of the Chief Analyst.
	Total Solids.	Fat.	Non-Fat Solids.	Metallic Tin.		

D. J. KEARNEY, INSPECTOR.

	p. c.	p. c.	p. c.	p. c.	
.....				0.007	67481
.....				0.008	67482
Peerless				0.005	67483
Jersey				0.001	67484
St. Charles				0.002	67485

J. A. RICKEY, INSPECTOR.

St. Charles				0.003	70536	
Cupid's Dream				0.049	70537	Dissolved tin excessive
Canada First				0.006	70538	
Peerless				0.010	70539	
Canada First				0.009	70541	
Quaker's				0.003	70542	
Pure Table cream, sterilized. No preservatives used.				0.001	70543	
St. George				0.004	70544	
Guaranteed pure. Absolutely germless.				0.002	70600	

JAMES HOGAN, INSPECTOR.

St. Charles				0.010	70281	
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H. J. DAGER, INSPECTOR.

Peerless				0.012	69926	
St. Charles				0.009	69970	
Canada First				0.017	69971	
Carnation				0.010	69972	
St. George				0.008	69973	

BULLETIN No. 345—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	
				Quantity.	Cents.	Manufacturer.	Furnisher.

DISTRICT OF HAMILTON—

1915.							
Sept. 30	Evaporated Milk.	58416	A. R. McLachlin, 72 King St., W., Hamilton.	3 tins.	15	.....	.....
" 30	"	58417	" " "	3 "	15	.....	.....
Oct. 4	"	58418	H. J. Wells, 54 King St., St. Catharines.	3 "	30	.....	.....

DISTRICT OF WINDSOR—

Oct. 12	Evaporated Milk.	54683	Orendorf Bros., Ridgetown.	3 tins.	15	Aylmer Condensed Milk Co., Hamilton.	.....
" 12	"	54685	Clark & Sons, Ridgetown.	3 "	30	Borden Milk Co., Montreal.	.....

DISTRICT OF MANITOBA—

Oct. 27	Evaporated Milk.	61439	Transcona Mercantile Co., Transcona.	3 cans	30	Borden Milk Co., Montreal.	.....
" 27	"	61440	H. Mann, Transcona.	3 "	30	J. Malcolm & Sons, St. George.	.....
" 29	"	61441	Hudson's Bay Co., Winnipeg.	3 "	30	B. C. Milk Co., British Columbia.	.....
" 29	"	61442	A. Hendry, 392 Portage Ave., Winnipeg.	3 "	30	Aylmer Condensed Milk Co., Hamilton.	.....
" 30	"	61443	The T. Eaton Co., Winnipeg.	3 "	25	Crescent Creamery Co., Winnipeg.	.....
Nov. 1	"	61444	D. Christie, 1459 Main St., Winnipeg.	3 "	25	C.C.C. Company, Winnipeg.	.....

DISTRICT OF ALBERTA—

Nov. 16	Evaporated Milk.	52296	Spencer Todd, Ltd., Medicine Hat.	3 tins.	30	Borden Milk Co., Montreal.	.....
" 16	"	52297	Sprague & Williamson, Medicine Hat.	3 "	30	B.C. Milk Cond. Co., New Westminster, B.C.	.....
" 16	"	52298	The Good Company, Lethbridge.	3 "	30	Aylmer Cond. Milk Co., Hamilton.	.....
" 23	"	52299	Geo. I. Wood, Calgary.	3 "	30	Malcolm Cond. Milk Co., St. George.	.....
" 24	"	52300	J. T. Macdonald, Calgary.	3 "	45	Borden Milk Co., Montreal.	.....

EVAPORATED MILK.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.				No. of Sample.	Remarks and Opinion of the Chief Analyst.
	Total Solids.	Fat.	Non-Fat Solids.	Metallic Tin.		

J. J. COSTIGAN, ACTING INSPECTOR.

	p. c.	p. c.	p. c.	p. c.		
Canada First				0.008	58416	
Peerless				0.009	58417	
St. Charles				0.004	58418	

JOHN TALBOT, INSPECTOR.

Canada First				0.006	54683	
St. Charles				Small trace.	54685	

J. B. COSGROVE, TEMPORARY INSPECTOR.

	26.48	7.80	18.68		61439	Genuine.
	24.64	7.90	16.74		61440	"
	23.32	7.28	16.04		61441	Non-fat solids low.
	27.00	7.68	19.32		61442	Genuine.
	23.60	7.20	16.40		61443	Non-fat solids low.
	24.60	7.80	16.80		61444	Genuine.

A. W. R. MARKLEY, INSPECTOR.

St. Charles	25.64	7.62	18.02	0.007	52296	Genuine.
B.C.	24.28	7.68	18.60	0.003	52297	"
Canada First	24.74	7.12	17.62	0.004	52298	"
St. George	26.86	7.86	19.00	0.061	52299	" it dissolved tin excessive
Peerless	24.88	7.46	17.42	0.011	52300	"

BULLETIN No. 345—

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	
				Quantity.	Cents.	Manufacturer.	Furnisher.

DISTRICT OF ROCKY MOUNTAINS—

1915.							
Oct. 18	Evaporated Milk	61889	M. Penney, Prince George	3 tins.	40	Borden Milk Co., Montreal.	
" 18	"	61890	" "	3 "	30	B.C. Milk Cond. Co., New Westminster.	
Nov. 16	"	61899	Merritt Mercantile Co., Merritt.	3 "	30	Courtenay Cond. Milk Co., Courtenay.	
" 16	"	61900	" "	3 "	40	Aylmer Cond. Milk Co., Hamilton.	

DISTRICT OF VANCOUVER—

Oct. 27	Evaporated Milk	55360	T. W. Turner, 890 Pender St. W., Vancouver.	3 tins.	30	Courtenay Cond. Milk Co., Courtenay.	
" 27	"	55361	" "	3 "	30	Aylmer Cond. Milk Co., Hamilton.	
" 27	"	55362	" "	3 "	15	Pacific Coast Cond. Milk Co., Seattle, Wash.	
" 27	"	55363	" "	3 "	15	Borden Milk Co., Montreal.	
" 28	"	55364	Woodward Deptl. Stores, Vancouver.	3 "	25	Courtenay Cond. Milk Co., Courtenay, B.C.	
" 28	"	55365	" "	3 "	30	Borden Milk Co., Montreal.	
" 28	"	55366	S. W. Wallace, 44 Hastings St. W., Vancouver.	3 "	15	Dominion Cannery, Ltd., Hamilton.	
Nov. 2	"	55367	W. H. Edgett, 48 Hastings St. W., Vancouver.	3 "	30	B. C. Cond. Co., Ltd., Chulivack	

DISTRICT OF VICTORIA—

Nov. 10	Evaporated Milk	66617	Windsor Grocery Co., 817 Govt. St., Victoria.	3 tins.	45	P.C. Cond. Milk Co., Seattle.	
" 10	"	66618	" "	3 "	30	Borden Milk Co., Montreal.	
" 10	"	66620	The West End Grocery Co., 1002 Govt. St., Victoria.	3 "	30	" "	
" 11	"	66623	Dixie H. Ross & Co., 1317 Govt. St., Victoria.	3 "	30	Courtenay Cond. Milk Co., Courtenay, B.C.	
" 12	"	66632	Acton Bros., 1317 Douglas St., Victoria.	3 "	30	B.C. Cond. Milk Co., New Westminster.	
" 12	"	66635	H. O. Kirkham & Co., 1109 Govt. St., Victoria	3 "	25	Aylmer Cond. Milk Co., Hamilton.	

EVAPORATED MILK.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.				No. of Sample.	Remarks and Opinion of the Chief Analyst.
	Total Solids.	Fat.	Non-fat Solids.	Metallic Tin.		

THOS. PARKER, INSPECTOR.

	p. c.	p. c.	p. c.	p. c.		
St. Charles	24.72	7.42	17.30	0.021	61889	Genuine; but dissolved tin noteworthy.
B. C.	23.64	7.50	16.14	0.010	61890	Genuine.
Buttercup	24.90	8.10	16.80	0.008	61899	"
Canada First	25.74	7.46	18.28	0.027	61900	Genuine; but dissolved tin excessive.

E. J. MORGAN, INSPECTOR.

Buttercup	20.20	7.14	13.06	0.050	55360	Dissolved tin excessive; non-fat solids low.
Canada First	26.50	7.30	19.20	0.051	55361	Genuine; but dissolved tin excessive.
Carnation	25.04	7.74	17.30		55362	Genuine.
St. Charles	25.18	7.76	18.42		55363	"
Pride of Vancouver. Prepared specially for Vendors.	24.32	7.48	16.84	0.023	55364	Dissolved tin noteworthy; otherwise meets standard.
Jersey	25.08	7.52	17.56	0.039	55365	Dissolved tin excessive; otherwise genuine.
Quaker	24.50	7.20	17.30	0.062	55366	"
B. C.	22.44	7.36	15.08	0.065	55367	Non-fat solids low.

D. O'SULLIVAN, INSPECTOR.

Carnation	24.70	7.62	17.08	0.054	66	Dissolved tin excessive; otherwise genuine.
Jersey	24.74	7.64	17.10	0.032	66616	"
St. Charles	24.98	7.58	17.40	0.037	66620	"
Buttercup	20.14	7.22	12.92	0.014	66628	Non-fat solids low.
B. C.	23.14	7.42	15.72		66632	"
Canada First	24.98	7.60	17.38		66635	Genuine.